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10/535,157	05/16/2005	Helmuth Eggers	3926.150	5769

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EXAMINER

ROSENBERGER, FREDERICK F

ART UNIT	PAPER NUMBER
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2884

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/535,157

Applicant(s)

EGGERS ET AL.

Examiner

Frederick F. Rosenberger

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 8/18/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's preliminary amendment, filed 16 May 2005, has been received and entered. Accordingly, changes have been made to the specification. Claims 1-7 have been amended. Claim 8 has been cancelled. Claim 9 has been added. Thus, claims 1-7 and 9 are currently pending in this application.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d) from the International Bureau for PCT/EP03/12572, which papers have been placed of record in the file. The International Search Report, dated 11 February 2004, for said application has also been communicated from the International Bureau and considered.

Specification

3. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

4. The disclosure is objected to because of the following informalities: In paragraph 20, the acronym "ACC" has been undefined in the specification. The acronym has been understood to refer to adaptive cruise control.

Appropriate correction is required.

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5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The new limitations of claim 1, lines 13-15, "evaluation takes place in one component-region and no evaluation takes place in another component-region".

It is further noted that since this limitation cannot be found in the application as filed and translations of the international application and the priority application have not been filed, applicant may not be entitled to the priority date for these new limitations.

Claim Objections

6. Claim 1 is objected to because of the following informalities: In claim 1, line 4, "system" should probably be deleted. In claim 1, line 8, "the perception region" lacks proper antecedent basis. In claim 1, line 9, "the region" lacks proper antecedent basis in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-7 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, lines 22-23 recite the limitation that each of the component-regions are subjected to a specific evaluation. However, lines 13-15 of the same claim recite the limitations that evaluation takes place in one component-region while no evaluation takes place in another component-region. Thus, the two limitations are at odds with each, as a component-region cannot be subjected to a specific evaluation if no evaluation takes place. For the purposes of this Office action, no evaluation has been interpreted as a form of a specific evaluation. The balance of the claims is rejected as being dependent upon claim 1.

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. Claims 1-7 and 9 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims are directed towards a statutory category of invention (i.e. a process); however, the claims are directed to a judicial exception (i.e. a mathematical algorithm); as such, pursuant to the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106), the claims must have either physical transformation and/or a useful, concrete and tangible result. The claims fail to include transformation from one physical state to another. Although, the claims appear useful and concrete, there does not appear to be a tangible result claimed. Merely subjecting each of the component-regions to a specific evaluation would not appear to be sufficient to constitute a tangible result, since

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the outcome of the subjecting step has not been used in a disclosed practical application nor made available in such a manner that its usefulness in a disclosed practical application can be realized. As such, the subject matter of the claims is not patent eligible.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 1, 2, 4-6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saka et al. (US Patent # 6,792,147) in view of Morizane et al. (US Patent Application Publication # 2002/0026274) and Yamada (US Patent # 6,369,700).

With regards to claim 1, Saka et al. disclose a method for sensing the surroundings in front of a road vehicle (column 1, lines 6-9) by means of a surrounding sensing system (Figure 1 or Figure 2) in which the surroundings data is sensed by means of a surroundings sensor, in the form of an image sensor **1** (Figure 1) or pair of line sensors **28, 29** (Figure 2), and objects within the surroundings data are detected by processing the sensor data (Figure 3),

Wherein a perception region in which objects are detected corresponds to a component-region of the region sensed by the sensor (Figure 12);

Wherein the perception region is divided into a plurality of component-regions (Figure 10 and 12), wherein evaluation takes place in one component-region, in the form of processing area **30** (Figure 12) but does not take place in another component region, in the form of the image area external to area **30**; and;

Wherein the surroundings data is subjected to a multi-state evaluation, for example horizontal edge detection followed by judgment of the horizontal edges for appropriate classification as relevant or not (column 9, lines 14-42);

Saka et al. do not specifically disclose that the perception region is restricted to a lane prior to division into component-regions. Morizane et al. teach an imaging system for adaptive cruise control (abstract) wherein a lane of travel of the vehicle is recognized prior to image processing of the data (paragraphs 49 and 55). Morizane et al. do not specifically discuss a motivation for such a modification.

However, Yamada teaches a system for obstacle detection for use with an automobile wherein the relevant data analyzed by the system is restricted to the lane of travel. As discussed by Yamada, such a modification allows for reduced processing time as the amount of data to be analyzed is reduced to the most relevant data (column 1, lines 42-60). Although Yamada discusses these advantages with regards to a radar system, these advantages would be equally applicable to the imaging system proposed by Saka et al. and Morizane et al.

As such, it would have been obvious for a person having ordinary skill in the art at the time the invention was made to modify Saka et al. to restrict the perception region to the lane of travel prior to any image processing, so as to reduce processing time, as taught by Morizane et al. and Yamada.

With regards to claim 2, Morizane et al. teaches that the lane is defined by lane detection via image processing (paragraph 49; Figure 7).

With regards to claim 4, Saka et al. disclose that object perception is carried out by image processing techniques, specifically edge extraction (column 6, lines 19-24).

With regards to claim 5, Saka et al. disclose that the object classification is carried out by image processing methods, specifically horizontal edge evaluation techniques, so as to classify the object as a relevant vehicle or irrelevant (column 9, lines 25-43), thus ruling out false alarms.

With regards to claim 6, Saka et al. disclose that the distance from detected objects may be determined (column 5, lines 16-19).

With regards to claim 9, Saka et al. disclose that the system may be configured as an infrared optical system for night vision applications (column 4, lines 50-56).

14. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saka et al., Morizane et al., and Yamada, as applied to claim 1 above, and further in view of Nishigaki et al. (US Patent # 6,775,395).

The combination of Saka et al., Morizane et al., and Yamada disclose all the limitations of parent claim 1, as discussed above. However, the combination does not specifically recite the limitation of a predefined tolerance region added to the limits of the lane. Morizane et al. do not mention a tolerance region around the lane delimiter. Yamada appear to teach a lane range which extends onto the shoulder of the road (Figure 6), but fail to explicitly discuss any tolerance region.

However, tolerances are often included in engineering applications to account for variations in system components. As Nishigaki et al. suggest, tolerances are often included in image processing and distance calculations in an object recognition system (column 7, lines 1-19). Although such tolerances apply to the calculation of distances, one of ordinary skill in the art would recognize the need for tolerances, especially in view of variations in pixel performance (column 7, lines 3-5) as well as the possible location of relevant objects just outside or between lanes (see, for example, Maekawa, Figure 6).

Thus, it would have been obvious for a person having ordinary skill in the art at the time the invention was made to incorporate a tolerance region with the lane, so as to

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account for variations in imaging performance, as taught by Nishigaki et al., and to account for relevant objects outside or between lanes.

Also, in regards to the size of the perception region (i.e. lane region + tolerance region), the limitations of the claim can be construed as a discussion of optimum value for the perception region. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a perception region equal to a lane region plus a tolerance region, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272,205 USPQ 215 (CCPA 1980).

15. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saka et al., Morizane et al., and Yamada, as applied to claim 1 above, and further in view of Falbish et al. (European Patent Application Publication # 0544468 A2).

The combination of Saka et al., Morizane et al., and Yamada disclose all the limitations of parent claim 1, as discussed above. However, the combination does not specifically recite the limitation of sensing the movement of objects. Saka et al. teaches determination of location and distance, but does not specifically mention calculating the velocity of objects. Both Morizane et al. and Yamada contain similar disclosures in that regard.

Falbish et al. teach an object tracking system (Figure 1) for use with a vehicle similar to that proposed by Saka et al. (Figure 1; column 4, line 60 – column 5, line 15). Falbish et al. further teach that such a system can be used to track a number of targets

and to calculate the velocity of the object (column 11, lines 44-51). As would be evident to one of ordinary skill in the art, such information could be used to differentiate between moving vehicles and stationary vehicles, which could be used in the determination of collision scenarios.

Thus, it would have been obvious for a person having ordinary skill in the art at the time the invention was made to provide tracking of targets by calculation of target velocity, as taught by Falbish et al., so as to provide information between moving and stationary vehicles for collision assessment analysis.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bottesch et al. (US Patent # 5,166,681) teach passive and active imaging systems for object detection and avoidance wherein the field of view is restricted to the lane of travel.

Maekawa (US Patent # 5,530,771) teaches object image tracking employing different component-regions in an overall perception region of an image sensor.


Pawlicki et al. (US Patent # 7,038,577) teach an object detection system for a vehicle employing different evaluations in different component regions of an overall perception region, similar to the recitation of claim 1. However, Pawlicki et al. fail to qualify as prior art as the provisional application 60/433700, which contains the relevant disclosure, was filed after applicant's priority date.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick F. Rosenberger whose telephone number is 571-272-6107. The examiner can normally be reached on Monday - Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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